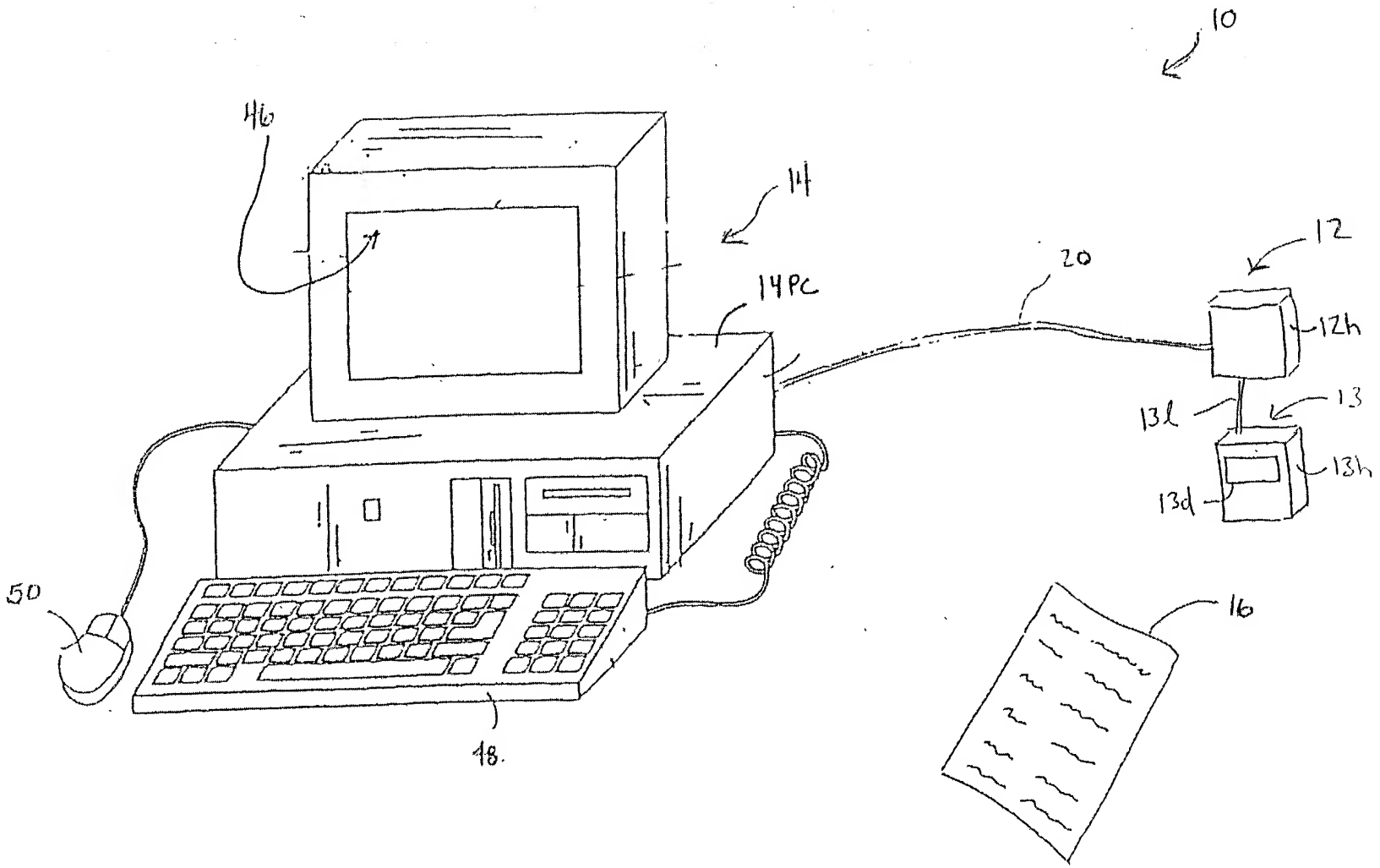


Fig. 1a

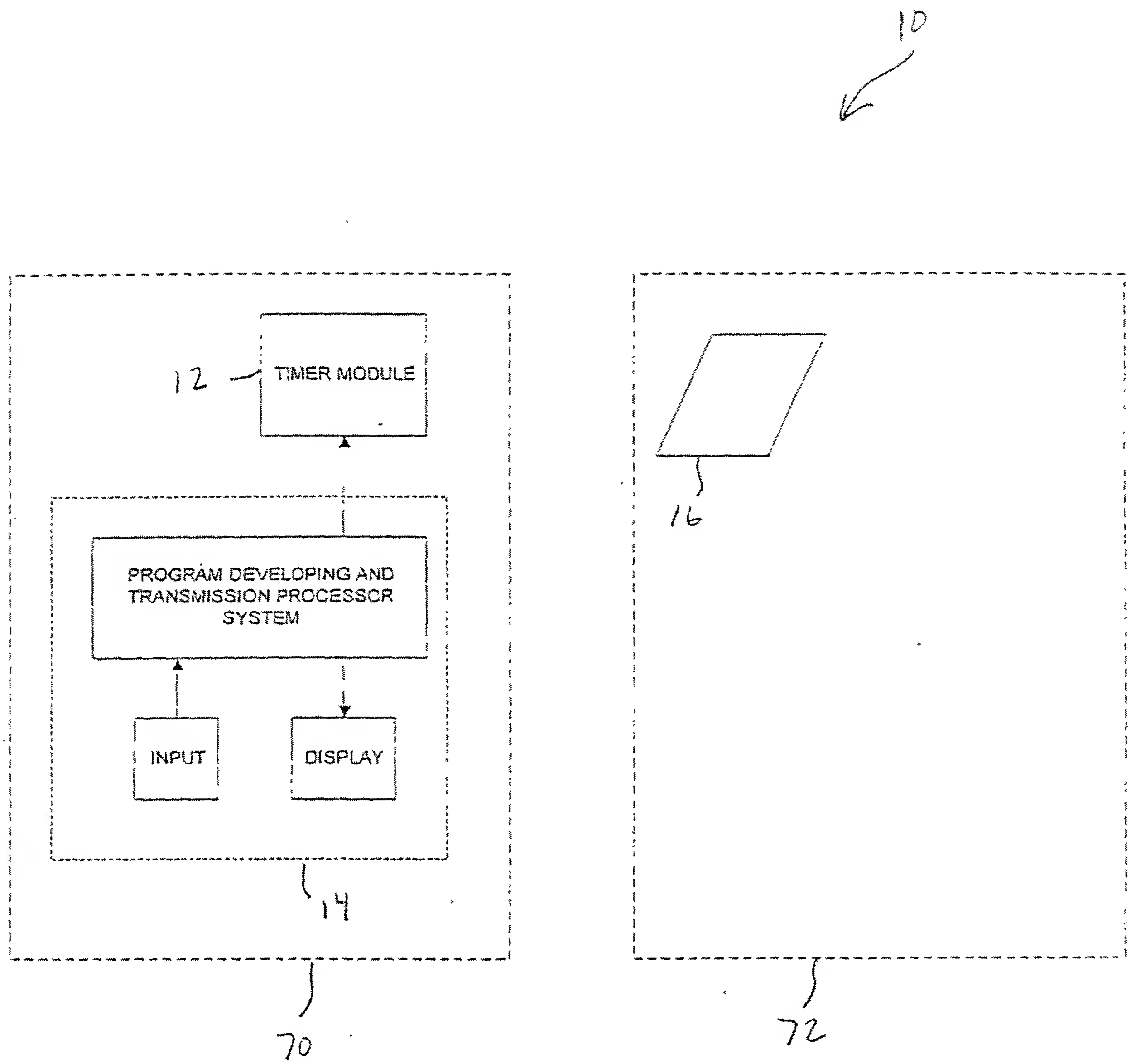

10
12
TIMER MODULE
PROGRAM DEVELOPING AND TRANSMISSION PROCESSOR SYSTEM
INPUT
DISPLAY
14
70
16
72

Fig. 1b

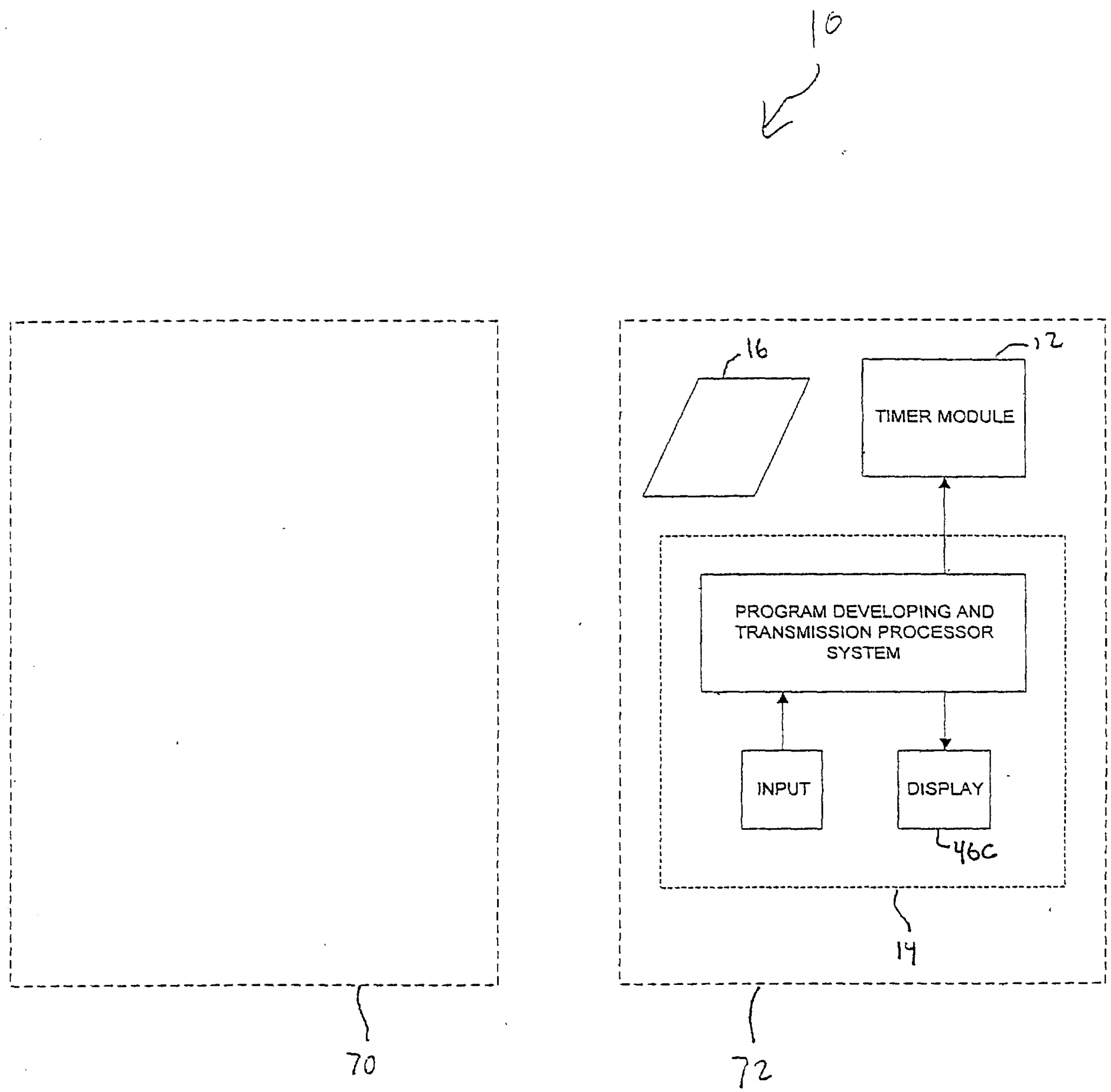

10
16
12
TIMER MODULE
PROGRAM DEVELOPING AND TRANSMISSION PROCESSOR SYSTEM
INPUT
DISPLAY
46c
14
70
72

Fig. 1c

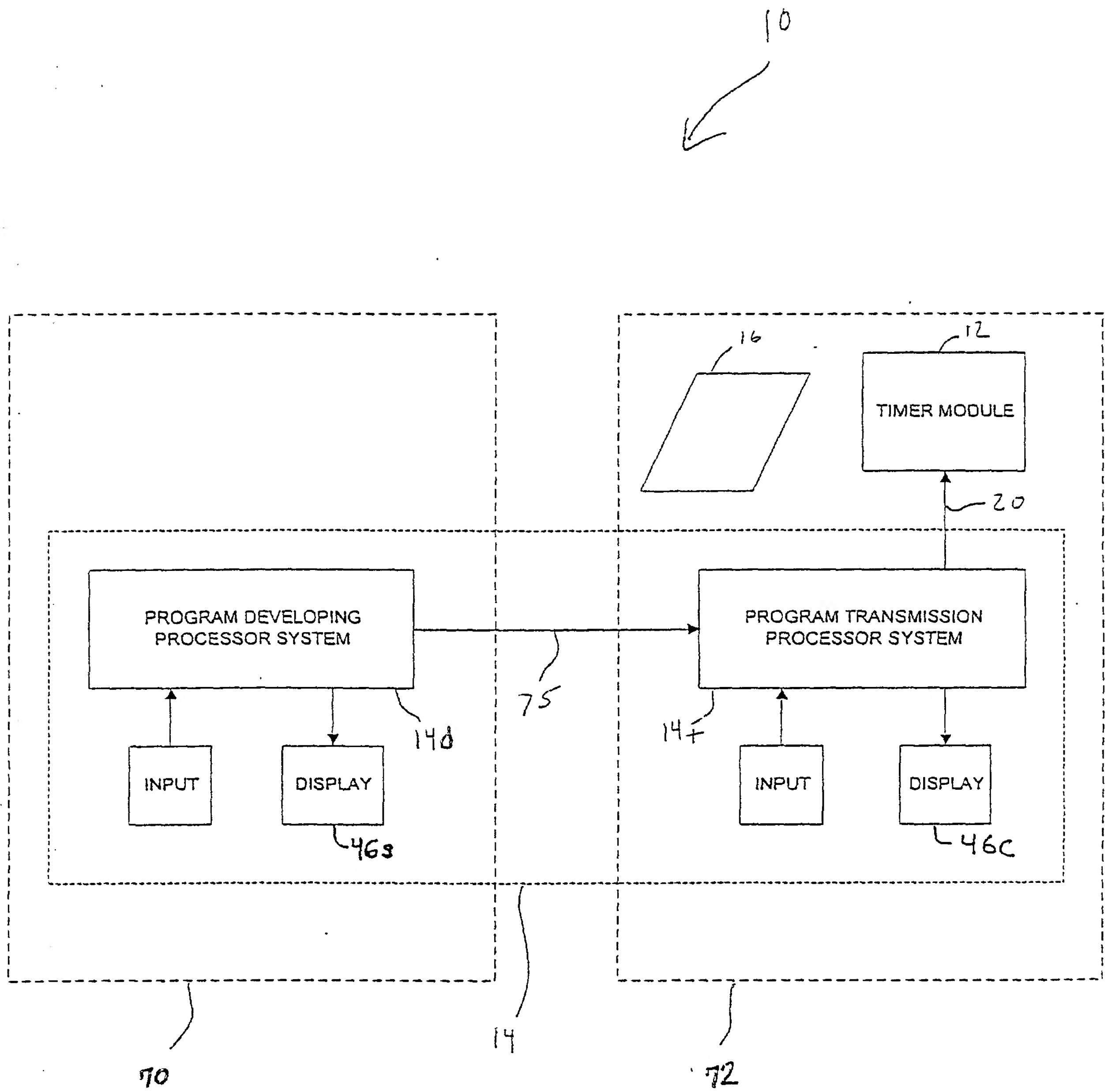

10
16
12
TIMER MODULE
20
PROGRAM DEVELOPING PROCESSOR SYSTEM
PROGRAM TRANSMISSION PROCESSOR SYSTEM
75
14d
14f
INPUT
DISPLAY
INPUT
DISPLAY
46a
46c
14
70
72

Fig. 1d

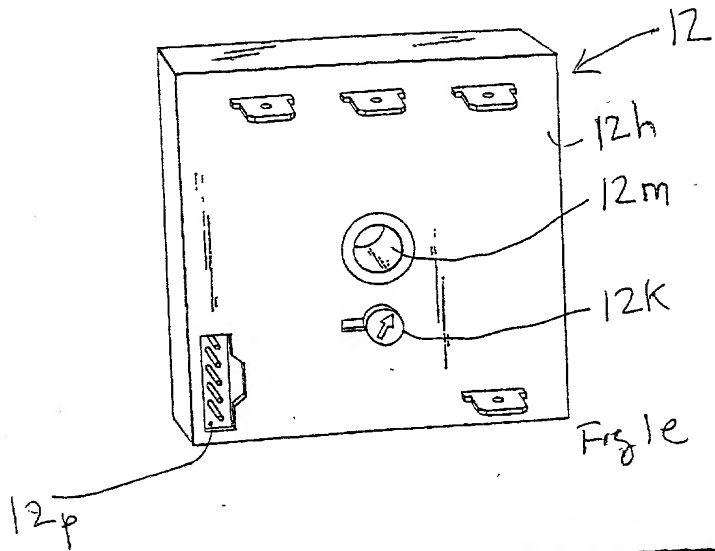


Fig 1e

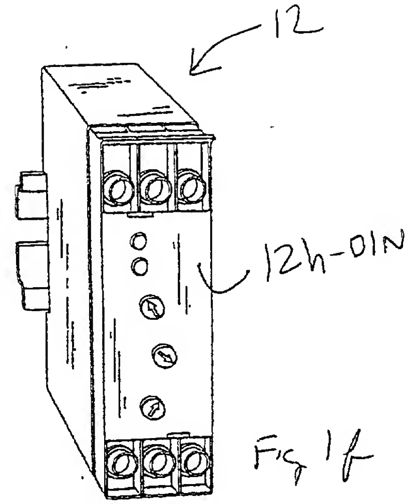


Fig 1f

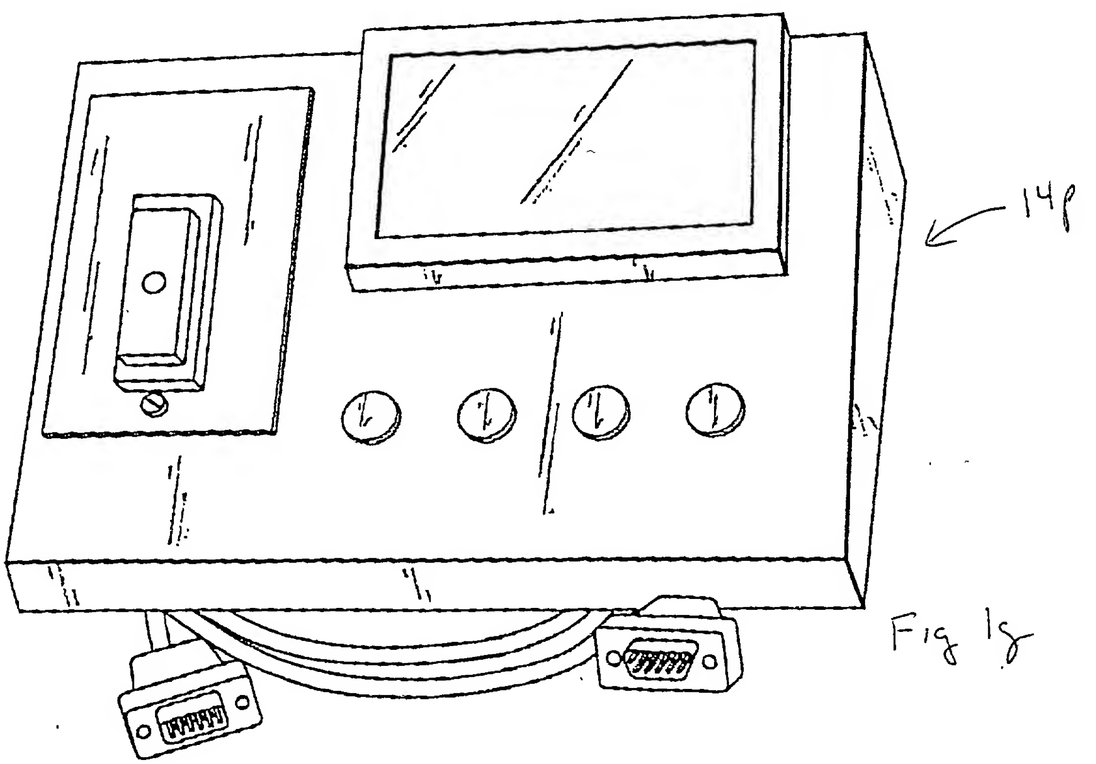


Fig 1g

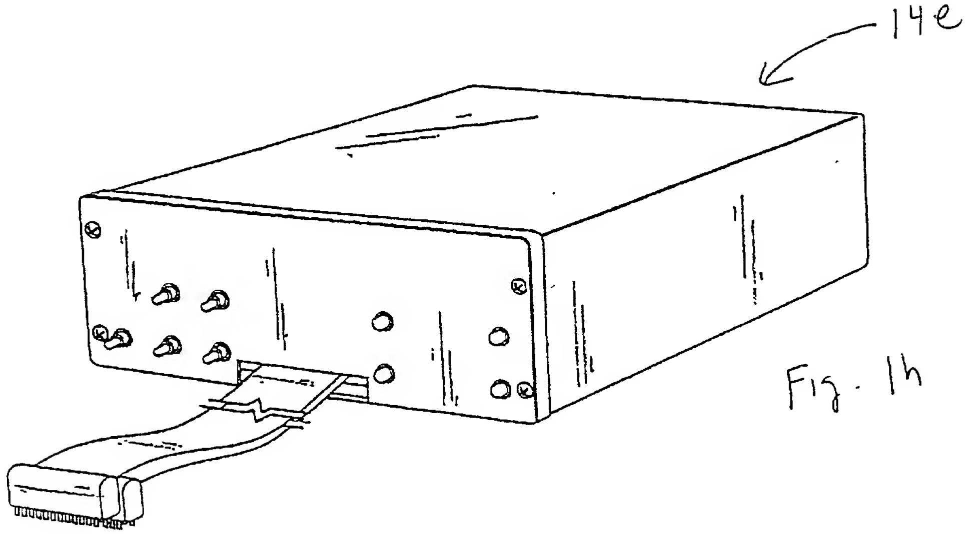


Fig. 1h

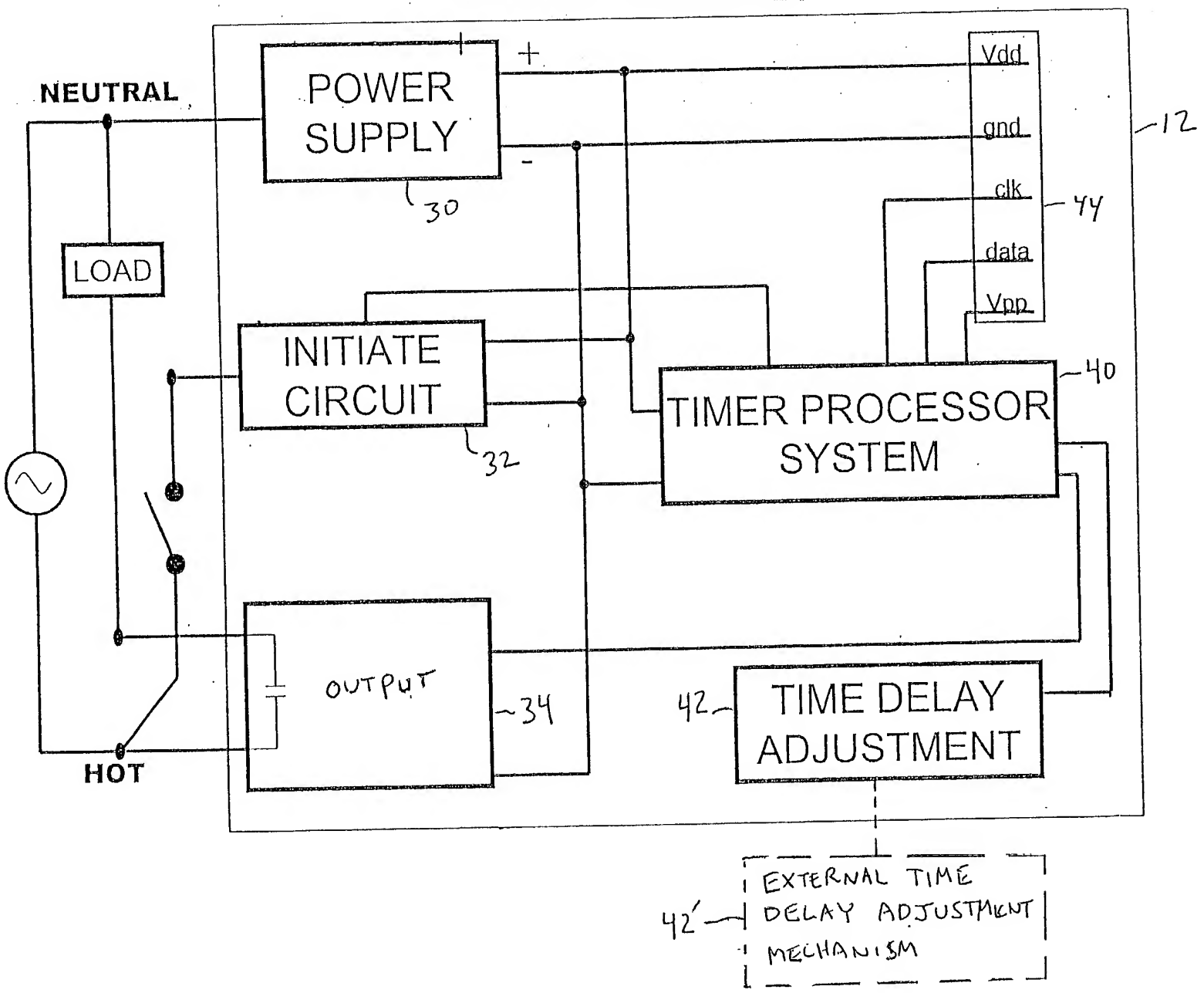


Fig. 2a

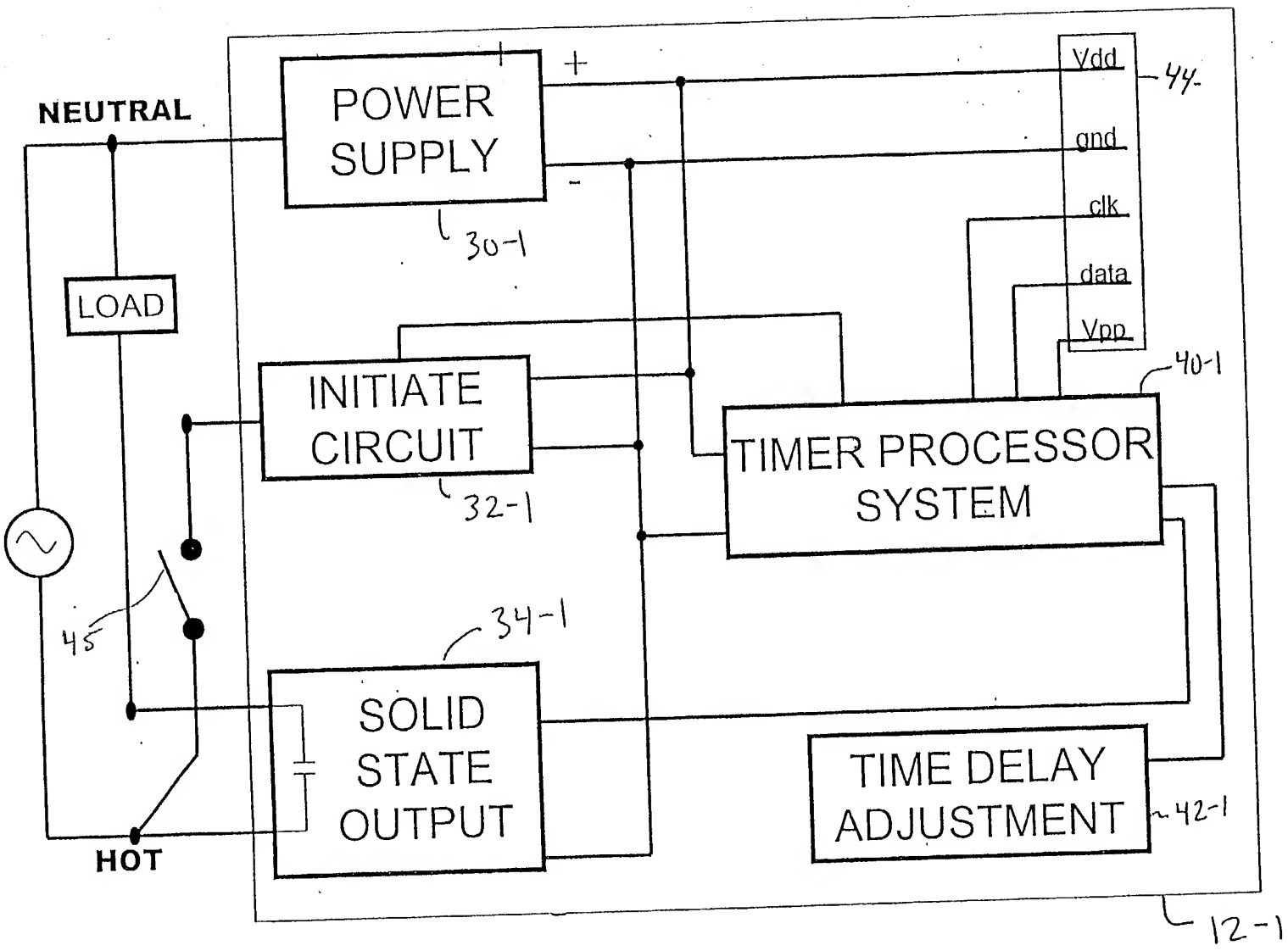


Fig. 2b

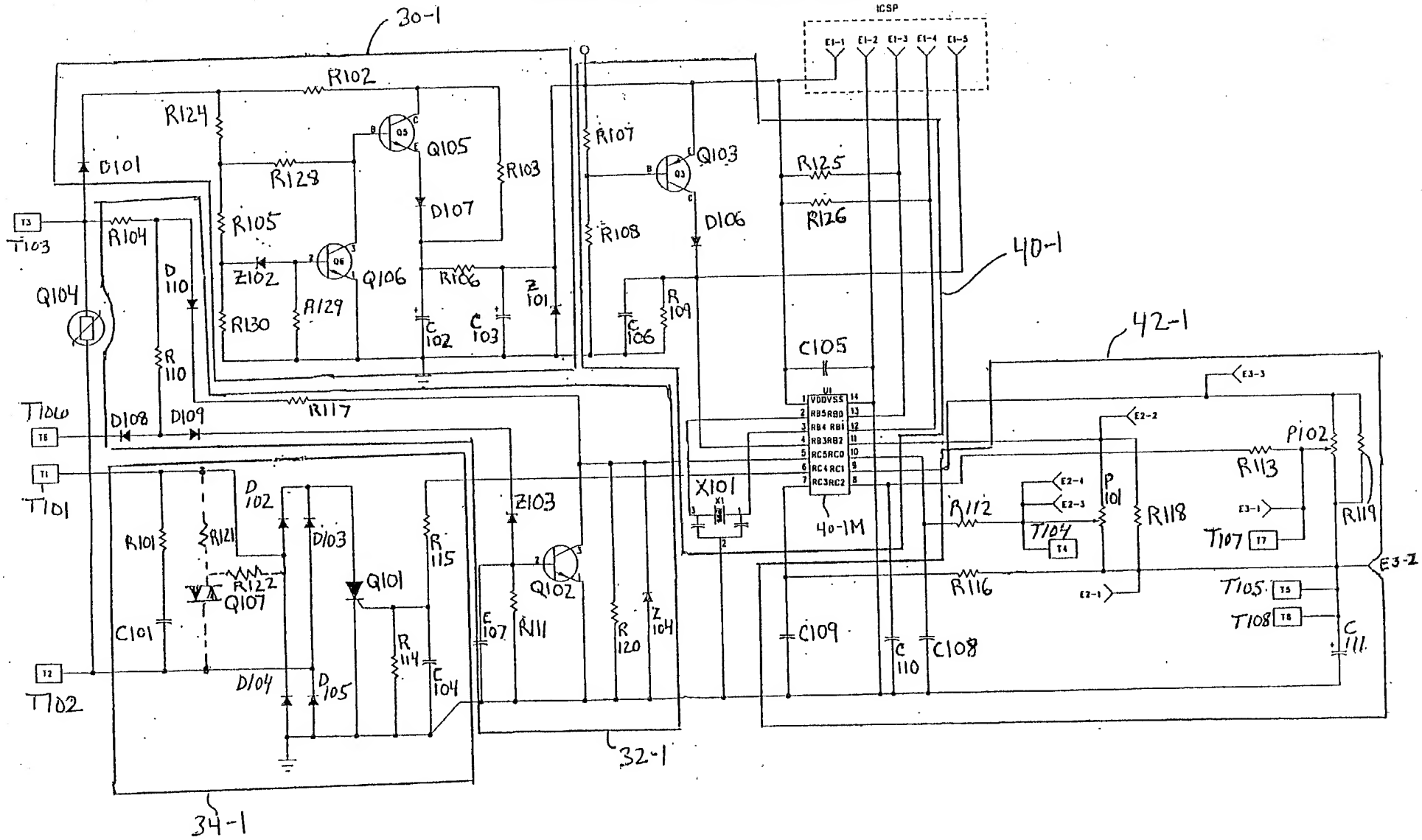


Fig. 2c

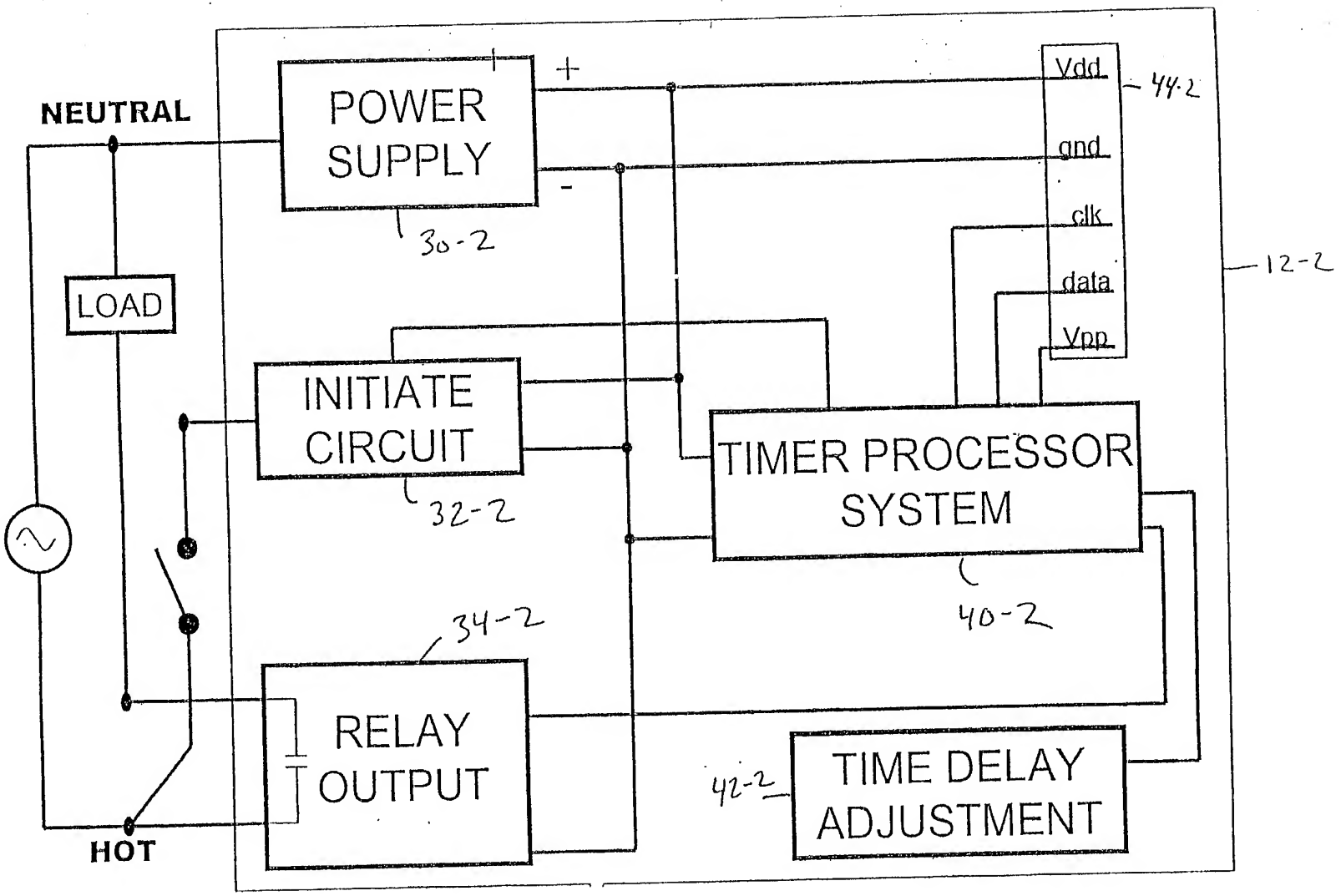


Fig. 2d

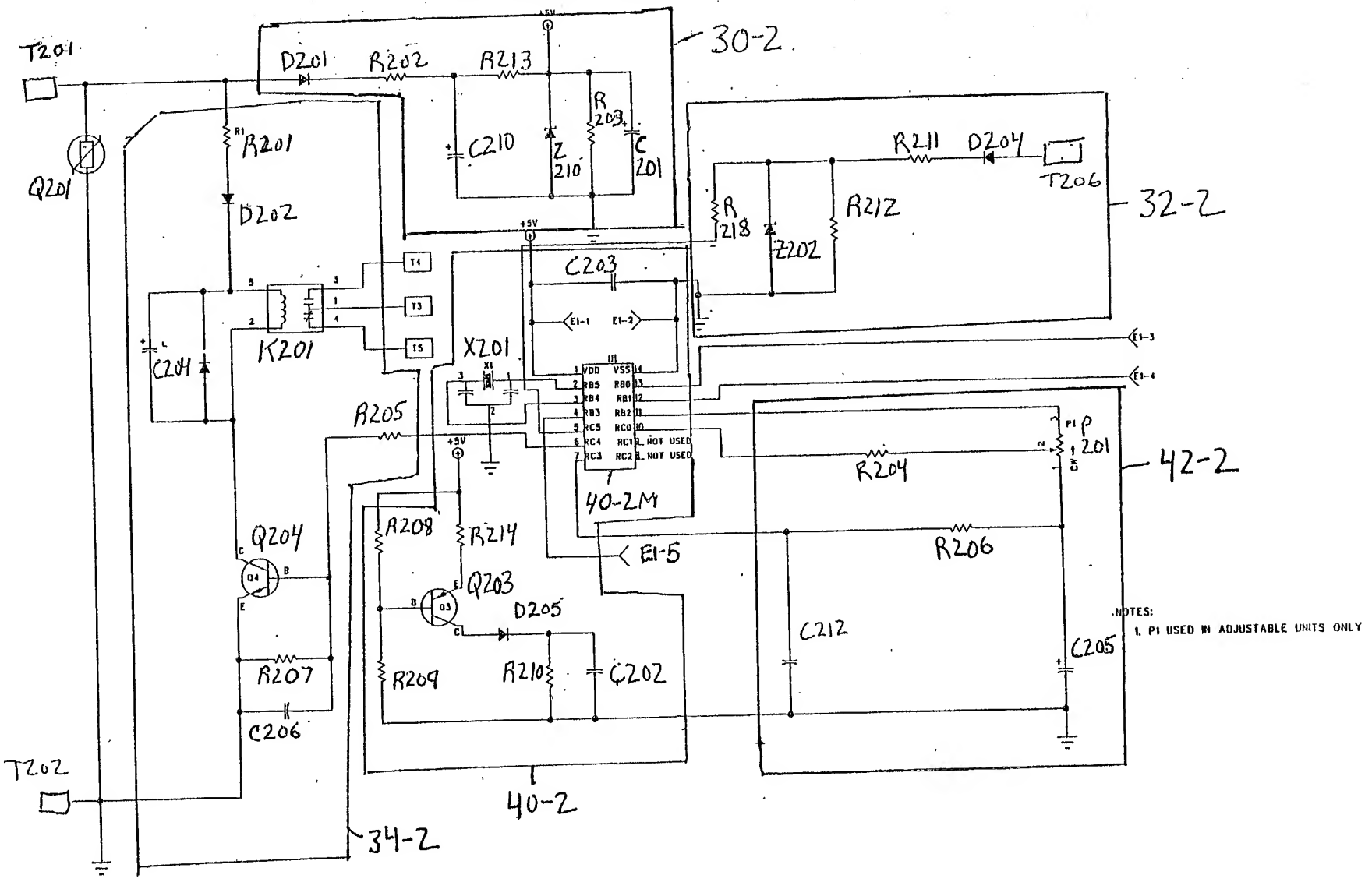


Fig 2e

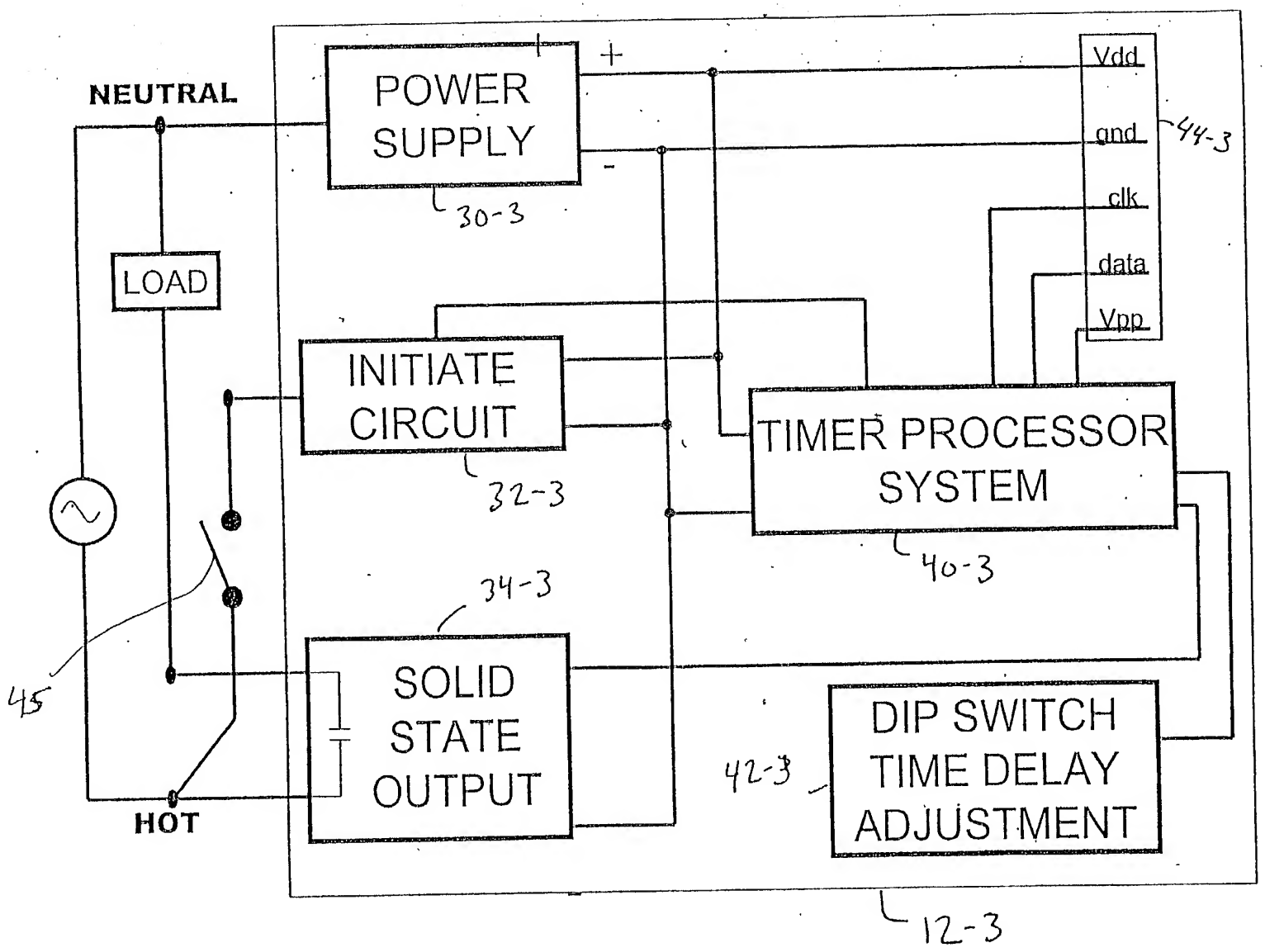


Fig. 2f.

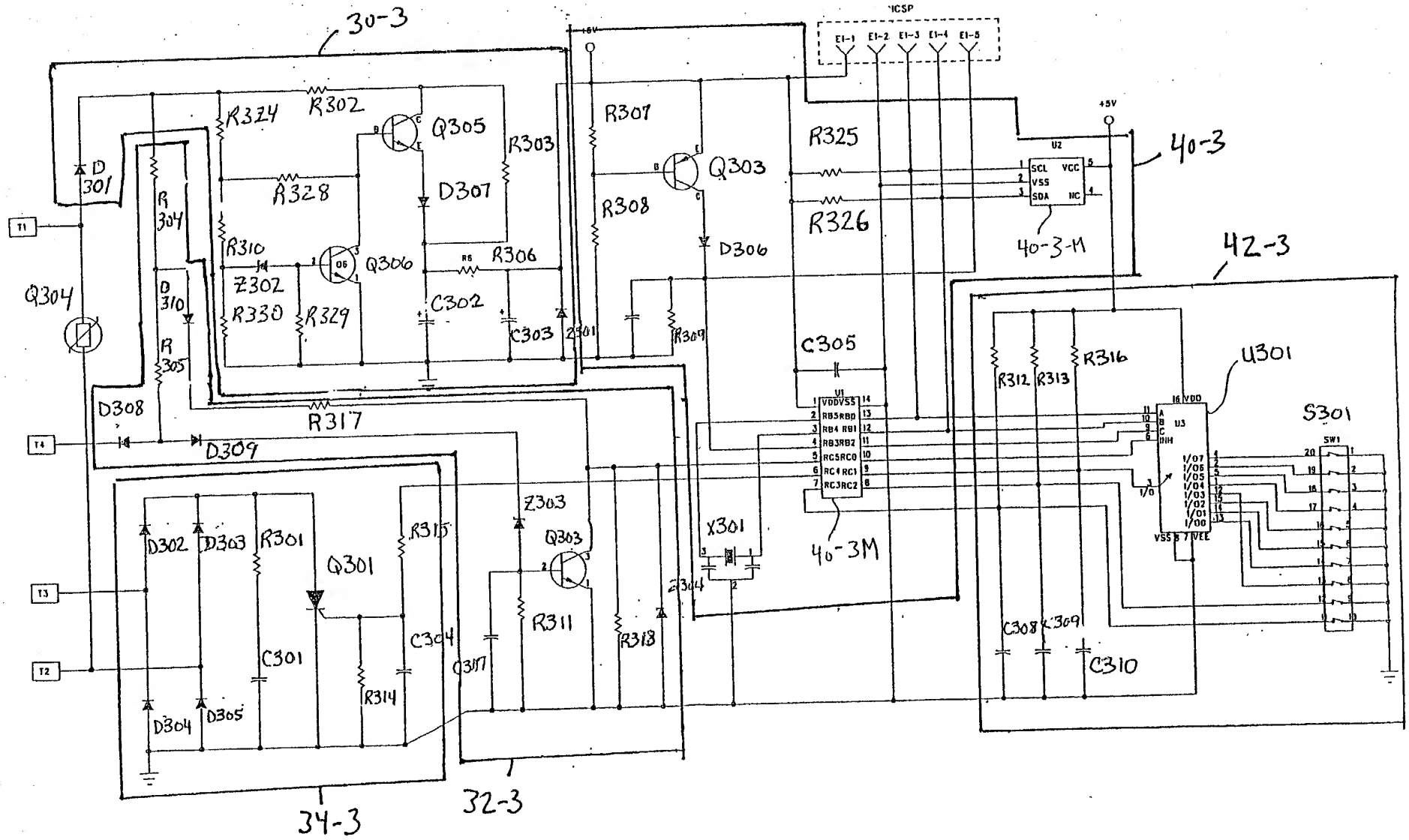


Fig. 2g

16-1

56

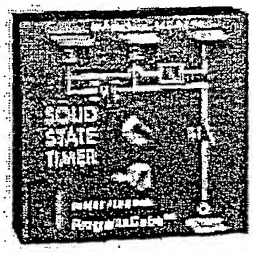
58

Model Number	Supply Voltage	Timer Function	Time Delay Function	Fixed Time Delay	Timing Range
XXX	120VAC	Delay on Make	Fixed	10s	---
XXY	120VAC	Delay on Make	Fixed	20s	---
XXZ	120VAC	Delay on Break	Fixed	10s	---
YXX	230VAC	Delay on Make	Fixed	10s	---
YXY	230VAC	Delay on Make	Fixed	20s	---
YXZ	230VAC	Delay on Break	Fixed	10s	---
ZXX	120VAC	Delay on Make	Adjustable	--	0-10s
ZXY	120VAC	Delay on Make	Adjustable	--	0-20s
ZXZ	120VAC	Delay on Break	Adjustable	--	0-10s
XYX	230VAC	Delay on Make	Adjustable	--	0-10s
XYY	230VAC	Delay on Make	Adjustable	--	0-10s
XYZ	230VAC	Delay on Break	Adjustable	--	0-10s

60 62 64 66 68

Fig. 3a

PCSP Module
KSPS PrograMaCube ™
Timing Module



- In Stock, Factory Programmed, Shipped Fast
- Choose 1 of 10 Standard Functions
- Microcontroller Circuitry, +/-1% Repeat Accuracy
- Solid State Output 1 A Steady, 10 A Inrush
- Knob, External Adjust or Fixed Time Delay
- 12 ... 230 V in 6 Ranges
- Delays from 100 ms ... 1000 h

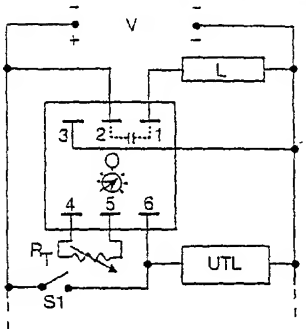
Description

Preliminary Data Sheet - Available Dates:
AC Voltages June 2001; DC Voltages August 2001

The KSPS Series is a factory programmed module available in any 1 of 10 standard functions. The KSPS offers a single, fixed, or an adjustable time delay. Modules are manufactured and placed in stock. When an order is received, the function software is added, making the modules complete. This provides fast delivery on all part numbers. The 1A steady, 10A inrush rated solid state output provides 100 million operations typical. Its microcontroller timing circuit provides excellent repeat accuracy and stability. Encapsulation protects against shock, vibration, and humidity. The KSPS Series is a cost effective approach for OEM applications that require small size, solid state reliability, and In Stock modules.

Patent Pending

■ Approvals: 



A knob is supplied for adjustable units or R_T terminals for external adjust.

V=Voltage L=Load UTL=Untimed Load
S1=Initiate Switch

Ordering Table

C6 C7 C8 C9

YKSPS Series (C1-C5)

X Input	X Adjustment	X Time Delay**	X Function**
-1 - 12VDC	-1 - Fixed	-1 -0.1... 10s	Specify Function (Refer to Function Chart for Code.)
-2 - 24VAC	-2 - Knob Adjust	-2 - 1... 100s	
-3 - 24VDC	-3 - External Adjust	-3 - 10... 1000s	
-4 - 120VAC		-4 -0.1.... 10m	
-5 - 120VDC		-5 - 1... 100m	
-9 - 120/230VAC		-6 - 10... 1000m	
		-7 -0.1... 10h	
		-8 - 1... 100h	
		-9 - 10... 1000h	

Example P/N: YKSPS923RE
Fixed- YKSPS9155SI

C5

**If Fixed Delay is selected, insert delay [0.1... 1000] followed by (S) secs., (M) mins., or (H) hrs.

**Function Chart	Code
Delay on Make	M
Delay on Break	B
Recycle (ON Time First, Equal Times)	RE
Single Shot	S
Interval	I
Trailing Edge Single Shot	TS
Inverted Single Shot	US
Inverted Delay on Break	UB
Accumulative Delay on Make	AM
Motion Detector/Retriggerable Single Shot	PS

Technical Data

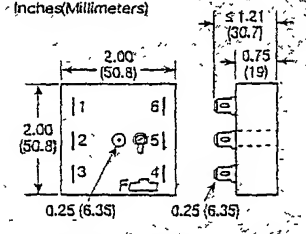
Time Delay	
Type	Microcontroller circuitry
Range	0.1s...1000h in 9 adjustable ranges or fixed
Repeat Accuracy	+/-1% or 16ms at 60Hz, 20ms at 50Hz, whichever is greater
Tolerance (Factory Calibration)	≤ +/-2%
Recycle Time	≤250ms
Initiate Time	≅40ms
Time Delay vs. Temperature & Voltage	≤ +/-2%
Input	
Voltage	12, 24, or 120VDC; 24, 120, or 120/230VAC
Tolerance	≤ +/-15%
Line Frequency	50...60Hz
Power Consumption (DC Voltages)	≤1W
Output	
Type	Solid state output
Rating	1A steady, 10A inrush for 16ms at 60°C
Voltage Drop	≅2.5V at 1A
Protection	
Circuitry	Encapsulated
Dielectric Breakdown	≥2000VRMS terminals to mounting surface
Insulation Resistance	≥100M Ω
Polarity	DC units are reverse polarity protected
Mechanical	
Mounting	Surface mount with one #10 (M5x0.8) screw
Package	2x2x 1.21in. (50.8x50.8x30.7mm)
Termination	0.25in (6.35mm) male quick connect terminals
Environmental	
Operating Temperature	-40°C...+60°C
Storage Temperature	-40°C...+85°C
Humidity	95% relative, non-condensing
Weight	≅2.4oz (68g)

R Selection Chart

Desired Time Delay*									R_T
Seconds			Minutes			Hours			
1	2	3	4	5	6	7	8	9	KΩ
0.1	1	10	0.1	1	10	0.1	1	10	0
1	10	100	1	10	100	1	10	100	10
2	20	200	2	20	200	2	20	200	20
3	30	300	3	30	300	3	30	300	30
4	40	400	4	40	400	4	40	400	40
5	50	500	5	50	500	5	50	500	50
6	60	600	6	60	600	6	60	600	60
7	70	700	7	70	700	7	70	700	70
8	80	800	8	80	800	8	80	800	80
9	90	900	9	90	900	9	90	900	90
10	100	1000	10	100	1000	10	100	1000	100

*When selecting an external R_T for tolerance of unit and the R_T, add at least 15%.

Inches (Millimeters)



F=Cover (Factory Use Only)

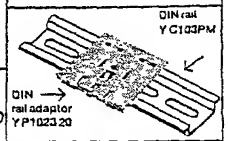
Accessories

External adjust potentiometer
P/Ns:
YP100495X (fig A)
YP100496X (fig B)

Quick connect to screw adaptor
P/N: YP101518

Versa-knob
P/N: YP07007

DIN rail
YC103PM



DIN → rail adaptor
YP102320

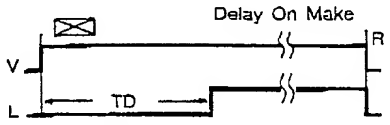
Female quick connect
P/N:
YP101564 (AWG 14/16)

See accessory pages at the end of this section.

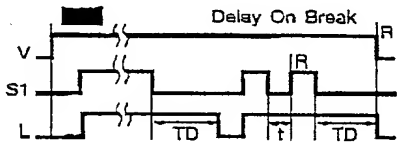
Fig.3b

16-2

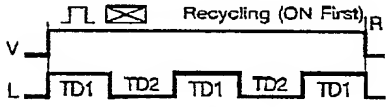
PCSP Module
KSPS ProgramaCube™ Timing Module



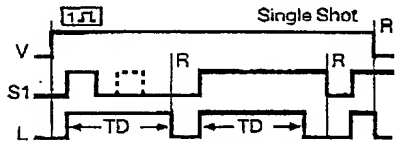
M - Delay On Make: Upon application of input voltage, the time delay begins. The output is de-energized before and during the time delay. At the end of the time delay, the output energizes and remains energized until input voltage is removed.
Reset: Removing input voltage resets the time delay and output.



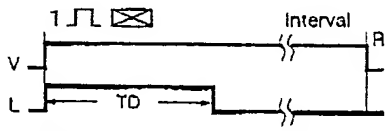
B - Delay On Break: Input voltage must be applied before and during timing. Upon closure of the initiate switch S1, the output energizes. The time delay begins when S1 is opened. The output remains energized during timing. At the end of the time delay, the output de-energizes. The output will energize if S1 is closed when input voltage is applied.
Reset: Reclosing S1 during timing resets the time delay. Removing input voltage resets the time delay and output.



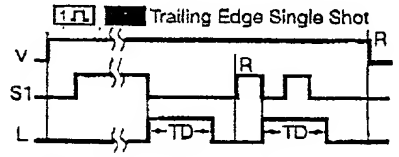
RE - Recycle Timer (ON Time First, Equal Times): Upon application of input voltage, the output energizes and the ON time begins. At the end of the ON time, the output de-energizes and the OFF time begins. At the end of the OFF time, the output energizes and the cycle repeats as long as input voltage is applied.
Reset: Removing input voltage resets the output and time delays, and returns the sequence to ON time first.



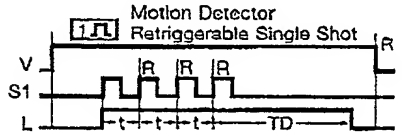
S - Single Shot: Input voltage must be applied before and during timing. Upon momentary or maintained closure of the initiate switch S1, the output energizes. At the end of the time delay, the output de-energizes. Opening or reclosing S1 during timing has no affect on the time delay. The output will energize if S1 is closed when input voltage is applied.
Reset: Reset occurs when the time delay is complete and S1 is open. Removing input voltage resets the time delay and output.



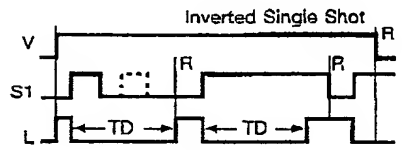
I - Interval: Upon application of input voltage, the output energizes and the time delay begins. At the end of time delay, the output de-energizes and remains de-energized until input voltage is removed.
Reset: Removing input voltage resets the time delay and the output.



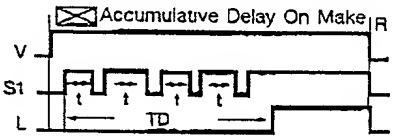
TS - Trailing Edge Single Shot: Input voltage must be applied before and during timing. When the initiate switch S1 opens, the output energizes. At the end of the time delay, the output de-energizes. Reclosing or opening S1 during timing has no affect on the time delay. The output will not energize if S1 is opened when input voltage is applied.
Reset: Reset occurs when the time delay is complete and S1 is closed. Removing input voltage resets the time delay and output.



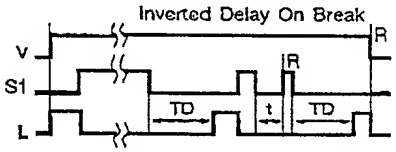
PS - Motion Detector/Retriggerable Single Shot: Input voltage must be applied before and during timing. The output is initially de-energized. When the initiate switch S1 closes momentary or maintained, the output energizes and the time delay begins. Upon completion of the delay, the output de-energizes.
Reset: Reclosing S1 resets the time delay and restarts timing. Reset is also accomplished by removing input voltage.



US - Inverted Single Shot: Input voltage must be applied before and during timing. Upon momentary or maintained closure of the initiate switch S1, the output de-energizes. At the end of the delay, the output energizes. Opening or reclosing S1 during timing has no affect on the time delay. The output will remain de-energized if S1 is closed when input voltage is applied.
Reset: Reset occurs when the time delay is complete and S1 is open. Removing input voltage resets the time delay and output.



AM - Accumulative Delay On Make: Input voltage must be applied before and during timing. The output is de-energized before and during the time delay. Each time the initiate switch S1 is closed, the time delay progresses; when it opens, timing stops. When the amount of time S1 is closed equals the full time delay, the output energizes and remains energized until reset.
Reset: Removing input voltage resets the time delay and the output.



UB - Inverted Delay On Break: Input voltage must be applied before and during timing. Upon closure of the initiate switch S1, the output de-energizes. The time delay begins when S1 is opened. The output remains de-energized during timing. At the end of the time delay, the output energizes. The output will remain de-energized if S1 is closed when input voltage is applied.
Reset: Reclosing S1 during timing resets the time delay. Removing input voltage resets the time delay and output.

Legend

V	Voltage
R	Reset
S1	Initiate Switch
L	Output & Load
TD,TD1, TD2	Time Delay
t	Incomplete Time Delay

Fig. 3b

16-2

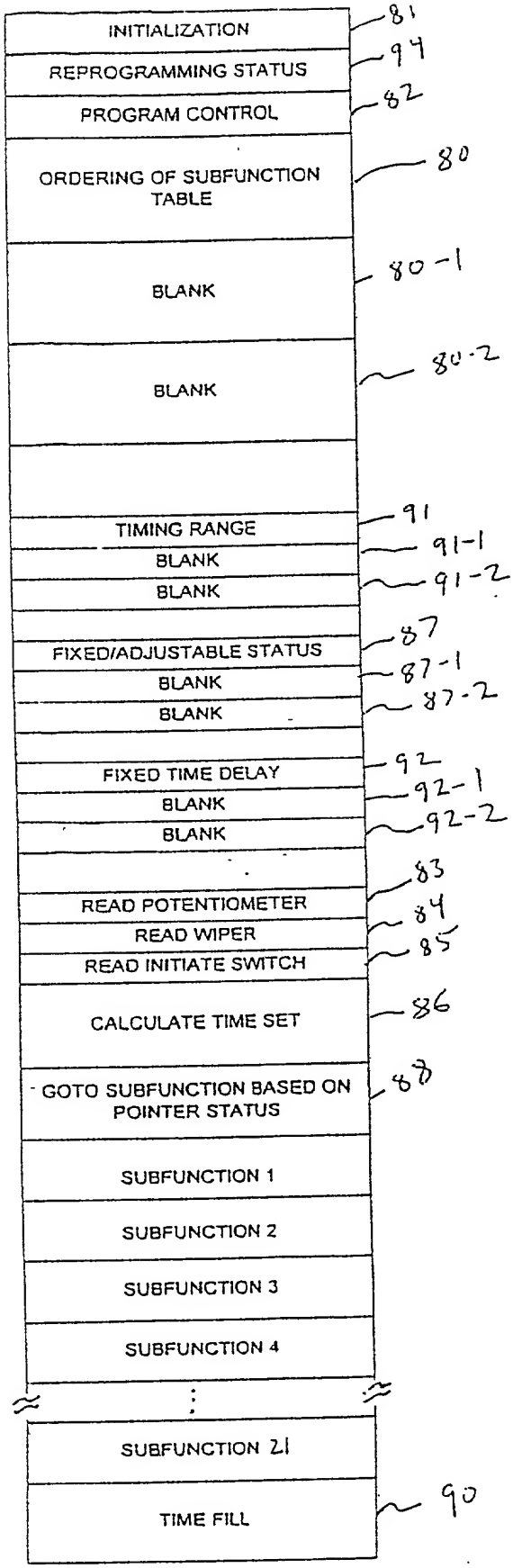

INITIALIZATION
81
REPROGRAMMING STATUS
94
PROGRAM CONTROL
82
78
ORDERING OF SUBFUNCTION TABLE
80
BLANK
80-1
BLANK
80-2
TIMING RANGE
91
BLANK
91-1
BLANK
91-2
FIXED/ADJUSTABLE STATUS
87
BLANK
87-1
BLANK
87-2
FIXED TIME DELAY
92
BLANK
92-1
BLANK
92-2
READ POTENTIOMETER
83
READ WIPER
84
READ INITIATE SWITCH
85
CALCULATE TIME SET
86
GOTO SUBFUNCTION BASED ON POINTER STATUS
88
SUBFUNCTION 1
SUBFUNCTION 2
SUBFUNCTION 3
SUBFUNCTION 4
SUBFUNCTION 21
TIME FILL
90

Fig. 4

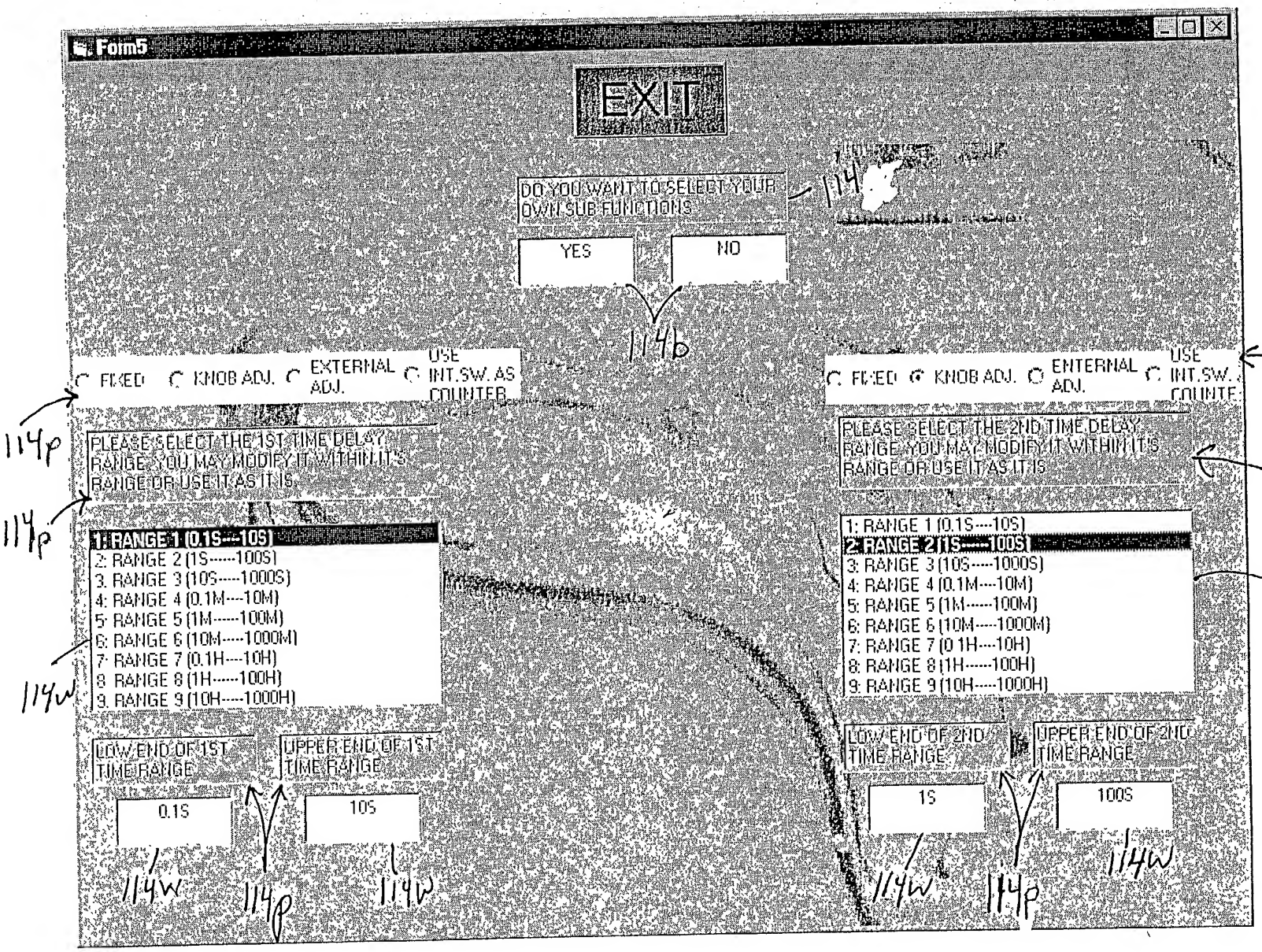

Form5
EXIT
DO YOU WANT TO SELECT YOUR OWN SUB FUNCTIONS
YES
NO
114
114b
FIXED
KNOB ADJ.
EXTERNAL ADJ.
USE INT.SW. AS COUNTER
114p
PLEASE SELECT THE 1ST TIME DELAY RANGE YOU MAY MODIFY IT WITHIN IT'S RANGE OR USE IT AS IT IS.
1: RANGE 1 (0.1S---10S)
2: RANGE 2 (1S-----100S)
3: RANGE 3 (10S----1000S)
4: RANGE 4 (0.1M---10M)
5: RANGE 5 (1M-----100M)
6: RANGE 6 (10M----1000M)
7: RANGE 7 (0.1H---10H)
8: RANGE 8 (1H-----100H)
9: RANGE 9 (10H----1000H)
114w
LOW END OF 1ST TIME RANGE
0.1S
UPPER END OF 1ST TIME RANGE
10S
FIXED
KNOB ADJ.
ENTERNAL ADJ.
USE INT.SW. COUNTE
PLEASE SELECT THE 2ND TIME DELAY RANGE YOU MAY MODIFY IT WITHIN IT'S RANGE OR USE IT AS IT IS
1: RANGE 1 (0.1S---10S)
2: RANGE 2 (1S-----100S)
3: RANGE 3 (10S----1000S)
4: RANGE 4 (0.1M---10M)
5: RANGE 5 (1M-----100M)
6: RANGE 6 (10M----1000M)
7: RANGE 7 (0.1H---10H)
8: RANGE 8 (1H-----100H)
9: RANGE 9 (10H----1000H)
LOW END OF 2ND TIME RANGE
1S
UPPER END OF 2ND TIME RANGE
100S

Fig. 5a

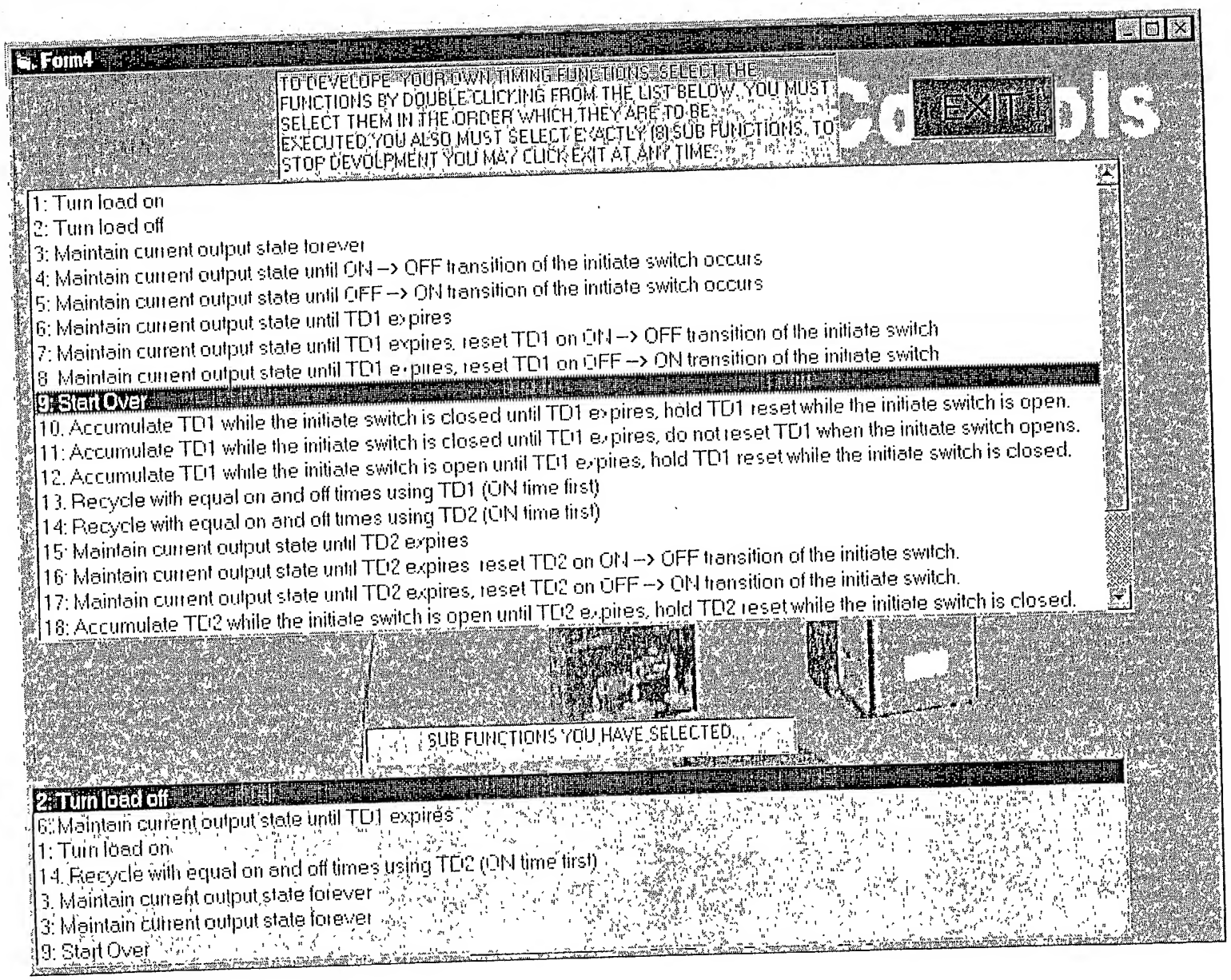

Form4
TO DEVELOPE YOUR OWN TIMING FUNCTIONS SELECT THE FUNCTIONS BY DOUBLE CLICKING FROM THE LIST BELOW. YOU MUST SELECT THEM IN THE ORDER WHICH THEY ARE TO BE EXECUTED. YOU ALSO MUST SELECT EXACTLY (8) SUB FUNCTIONS. TO STOP DEVOLPMENT YOU MAY CLICK EXIT AT ANY TIMES
EXIT
1: Turn load on
2: Turn load off
3: Maintain current output state forever
4: Maintain current output state until ON --> OFF transition of the initiate switch occurs
5: Maintain current output state until OFF --> ON transition of the initiate switch occurs
6: Maintain current output state until TD1 expires
7: Maintain current output state until TD1 expires, reset TD1 on ON --> OFF transition of the initiate switch
8: Maintain current output state until TD1 expires, reset TD1 on OFF --> ON transition of the initiate switch
9: Start Over
10. Accumulate TD1 while the initiate switch is closed until TD1 expires, hold TD1 reset while the initiate switch is open.
11: Accumulate TD1 while the initiate switch is closed until TD1 expires, do not reset TD1 when the initiate switch opens.
12. Accumulate TD1 while the initiate switch is open until TD1 expires, hold TD1 reset while the initiate switch is closed.
13. Recycle with equal on and off times using TD1 (ON time first)
14: Recycle with equal on and off times using TD2 (ON time first)
15: Maintain current output state until TD2 expires
16: Maintain current output state until TD2 expires reset TD2 on ON --> OFF transition of the initiate switch.
17: Maintain current output state until TD2 expires, reset TD2 on OFF --> ON transition of the initiate switch.
18: Accumulate TD2 while the initiate switch is open until TD2 expires, hold TD2 reset while the initiate switch is closed.
SUB FUNCTIONS YOU HAVE SELECTED
2: Turn load off
6: Maintain current output state until TD1 expires
1: Turn load on
14. Recycle with equal on and off times using TD2 (ON time first)
3. Maintain current output state forever
3: Maintain current output state forever
9: Start Over

Fig. 5b